

## **REMARKS**

The foregoing Amendment corrects translational errors and conforms the claims to United States practice. No new matter is added.

Respectfully submitted,

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## PATENT Attorney Docket No. 401585/BRAUN

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

**ULRICH JOOS** 

Art Unit: Unassigned

Application No. Unassigned

Examiner: Unassigned

Filed: March 14, 2002

For:

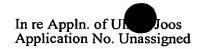
SCREW-TYPE INTRAOSSEOUS

DENTAL IMPLANT

## AMENDMENTS TO CLAIMS MADE VIA PRELIMINARY AMENDMENT

Amendments to existing claims:

- 1. (Amended) A dental implant-with comprising:
- a) a bottommost implant tip (1) located at the an apex;
- b) a root part (2) which extends to the implant tip (1), is intended to be fitted in a jawbone, and has a parabolic outer contour (A) with the implant tip (1) as vertex;
- c) an implant neck adjoining the root part-(2), an implant neck (3) which extends in the coronal direction and is intended to lie inside the gingiva; and
- d) an outer thread (4) provided on the root part (2), wherein characterized in that
- e) the root part-(2) has the parabolic outer contour-(A) along its entire length (l<sub>max</sub>) and as far as a theoretical ridge line-(5) at which it adjoins the implant neck-(3).
- 2. (Amended) The dental implant as claimed in claim 1, eharacterized-in-that wherein
- a) the outer thread provided on the root part-(2) has an outer contour extending parallel to the parabolic outer contour-(A) of the root part-(2), and
- b) ends at a distance of 1 mm to 4 mm from the ridge line-(5).
- 3. (Amended) The dental implant as claimed in claim 1-or-2,-characterized in that wherein
- a) the root part  $\frac{(2)}{(2)}$  at the ridge line  $\frac{(5)}{(5)}$  has the  $\underline{a}$  maximum radius  $(r_{max})$  extending in the radial x-direction;



- b) the parabolic outer contour (A), placed in a cartesian system of x-y coordinates, with the implant tip (1) positioned at the origin, follows the equation  $l_y = K \cdot 4r_x^2$ , where
- c)  $l_y$  represents the respective ordinate value and  $r_x$  represents the associated abscissa value; and
- d) the constant (K) results from the equation:  $K = l_{max} : 4r_{max}^{2}$ .
- 4. (Amended) The dental implant as claimed in claim 3, characterized in that wherein the maximum radius (r<sub>max</sub>) is between 1 mm and 3 mm, preferably-lying in the range of from 1.5 mm to 2 mm.
- 5. (Amended) The dental implant as claimed in-one-of claims claim 1-through-4, characterized in that wherein
- a) the outer thread-(4) is self-cutting;
- b) the length  $(l_{max})$  of the root part- $\frac{(2)}{(2)}$  correlates with-the <u>a</u> pitch (S) of the outer thread- $\frac{(4)}{(2)}$ ;
- c) the outer thread (4) ends at a distance, in the range of from 1 mm to 4 mm, from the ridge line (5); with
- d) the distance being greater as the length  $(l_{max})$  of the root part-(2) increases.
- 6. (Amended) The dental implant as claimed in claim 5,-characterized-in-that wherein the length  $(l_{max})$  of the root part-(2) and the pitch (S) of the outer thread-(4), given a maximum radius  $(r_{max}) = 2$  mm, correlate with one another as follows:

Length (l <sub>max</sub> )of root part (2) [mm]	Pitch (S) [mm]
6	0.65
8	1
10	1
14	1
16	1

- 7. (Amended) The dental implant as claimed in-one of claims claim 1-through 6, characterized in that wherein the outer thread-(4) with its includes thread teeth-(40) has the following values:
- a) the thread teeth at the root part (2), and extending extend in the y-direction, the thread teeth (40) and have a height (gh) in the region of about 0.3 mm; and

- b) the thread teeth in the x-direction, the thread teeth (40) have a length (g<sub>1</sub>) in the range of from 0.25 mm to 0.5 mm.
- 8. (Amended) The dental implant as claimed in claim 7,-characterized-in that wherein
- a) the maximum radius is 2 mm;
- <u>ab</u>) the length (g<sub>i</sub>) of the thread teeth-(40)-is-smaller decreases as the length (l<sub>max</sub>) of the root part (2) increases; and
- bc) the outer thread (4) with its thread teeth (40) has, given a maximum radius  $(r_{max})$  = 2 mm, the following values:

Length (l <sub>max</sub> ) of root part	Height (gh) of thread	Length (g <sub>1</sub> ) of thread
[mm]	teeth [mm]	teeth [mm]
6	0.3	0.4
8	0.3	0.4
10	0.3	0.3
14	0.3	0.25
16	0.3	0.25

- 9. (Amended) The dental implant as claimed in-one-of-claims claim 1-through-8, characterized in that wherein
- a) the implant is made of biocompatible material-having-suitable stability properties, for example titanium, titanium-based alloys, other-metals, their alloys, ceramic, glass ceramic, ceramic-like material or plastic; and
- b) the root part—(2) has a rough surface which is plasma-coated or ceramic-coated or is treated chemically, electrochemically, mechanically or by laser.
- 10. (Amended) The dental implant as claimed in-one of claims claim 1,-through 9 characterized in that wherein the implant neck-(3)
- a) is made of titanium, a titanium-based alloy or another biocompatible metal or its alloy and is polished; or
- b) is coated with ceramic, glass ceramic, ceramic-like material, hydroxyapatite, plastic or metal.
- 11. (Amended) The dental implant as claimed in one of claims claim 1 through 10, characterized in that wherein

- a) measured in the y-direction, the implant neck-(3) has a height (h) in the range of from 1 mm to 3 mm; and
- b) the implant neck-(3) is cylindrical or is widened or narrowed in a trumpet shape or conically in the coronal direction.

Please add the following claims:

- 12. (New) The dental implant as claimed in claim 4, wherein the maximum radius is from about 1.5 mm to about 2 mm.
- 13. (New) The dental implant as claimed in claim 9, wherein the biocompatible material comprises titanium-based alloys, metals, metal alloys, ceramic, glass ceramic, ceramic-like material or plastic.